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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

ED 066464

TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

MUSHROOM INSPECTOR (can. & preserv.) 9-68.60

B-582 S-302

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U. S. Employment Service
in Cooperation with
Pennsylvania State Employment Service

April 1964

GATB #2500

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

MUSHROOM INSPECTOR (can. & preserv.) 9-68.60

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Summary

The General Aptitude Test Battery, B-1002A, was administered to a final sample of 74 female workers employed as Mushroom Inspectors 9-68.60, at the Brandywine Mushroom Corporation, West Chester, Pennsylvania. The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data and their combined selective efficiency, Aptitudes K-Motor Coordination, F-Finger Dexterity and M-Manual Dexterity were selected for inclusion in the final test norms.

GATB Norms for Mushroom Inspector 9-68.60, B-582 S-302

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
T	CB-1-G CB-1-K	70	K	Part 8	75
F	CB-1-O CB-1-P	75	F	Part 11 Part 12	70
M	CB-1-M CB-1-N	70	M	Part 9 Part 10	70

Effectiveness of Norms

The data in Table IV indicate that only 68 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 77 percent would have been good workers. 32 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 23 percent would have been poor workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Mushroom Inspector 9-68.60.

II. Sample

During the period August 17 through September 6, 1961 the General Aptitude Test Battery, B-1002A was administered to a sample of 74 women employed as Mushroom Inspectors 9-68.60 at the Brandywine Mushroom Corporation, West Chester, Pennsylvania.

In selecting Mushroom Inspectors for employment at the Brandywine Mushroom Corporation, no tests are used and there are no age, education or physical requirements, but individuals with good eyesight are preferred. On-the-job training is given by the forelady and the job can be learned in approximately one day.

TABLE I

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 74	M	σ	Range	r
Age (years)	36.9	10.9	18-63	-.328**
Education (years)	9.0	2.0	6-13	.270*
Experience (months)	45.0	41.7	2-192	.027

*Significant at the .05 level
**Significant at the .01 level

III. Job Description

Job Title: Mushroom Inspector 9-68.60

Job Summary: Visually inspects mushrooms on conveyor belt or grading reel to sort out poor mushrooms. Picks up group of mushrooms in hands and examines for spotty or diseased parts. Inspects for open buttons or cracked, weak "veils" (fine membranes) and picks out stem either with or without root and sorts out poor ones. Discards any mushrooms not meeting the standards of color, or having root deficiencies or diseased spots.

IV. Experimental Battery

All the tests of the GATB, B-1002A, were administered to the sample group.

V. Criterion

The criterion data collected consisted of one set of supervisory ratings made by the superintendent of production using a modified form of USES SP-21, "Descriptive Rating Scale." The modified scale consisted of five items covering different aspects of job performance, with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency attained, were assigned to the alternatives. In order to obtain a distribution of criterion scores comparable to those obtained in studies using USES Form SP-21 which contains nine items, the total score for each individual was multiplied by 9/5. The range of final criterion was 14-45 with a mean of 27.1 and a standard deviation of 7.6.

VI. Qualitative and Quantitative Analyses

A. Qualitative Analysis

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Form Perception (P) - required in visually inspecting mushrooms, to observe shadings, diseased parts or obvious deficiencies.

Motor Coordination (K) - required in picking up mushrooms and passing from one hand to another for inspection.

Finger Dexterity (F) - required in picking out individual mushrooms that are defective.

Manual Dexterity (M) - required in picking up groups of mushrooms for examination.

On the basis of the job analysis data, V-Verbal Aptitude, N-Numerical Aptitude and S-Spatial Aptitude were rated "irrelevant" for success in this occupation.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 74

Aptitudes	M	σ	r
G-Intelligence	68.3	12.8	.268*
V-Verbal Aptitude	75.1	11.1	.241*
N-Numerical Aptitude	64.9	17.1	.376**
S-Spatial Aptitude	71.7	14.5	.061
P-Form Perception	68.8	21.0	.334**
Q-Clerical Perception	80.4	14.9	.274*
K-Motor Coordination	84.9	18.6	.237*
F-Finger Dexterity	83.5	21.2	.253*
M-Manual Dexterity	92.4	22.2	.374**

*Significant at the .05 level
**Significant at the .01 level

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important					X		X	X	X
Irrelevant		X	X	X					
Relatively High Mean							X	X	X
Relatively Low Sigma	X	X		X		X			
Significant Correlation with Criterion	X	X	X		X	X	X	X	X
Aptitudes to be Considered for Trial Norms	G				P		K	F	M

Trial norms consisting of various combinations of Aptitudes G, P, K, F and M with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of K-75, P-70 and M-70 had the best selective efficiency.

VII. Validity of Norms (Concurrent)

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 32 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes K, F and M with critical scores of 75, 70 and 70, respectively, and the dichotomized criterion for Mushroom Inspector 9-68.60. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Mushroom Inspector 9-68.60
(K-75, F-70, M-70)

N = 74	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	17	33	50
Poor Workers	14	10	24
Total	31	43	74

Phi Coefficient = .231
χ^2 = 3.922
P/2 < .025

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes K, F and M with minimum scores of 75, 70 and 70, respectively, have been established as B-1002 norms for Mushroom Inspector 9-68.60. The equivalent B-1001 norms consist of T-70, F-75 and M-70.

IX. Determination of Occupational Aptitude Pattern

When the specific test norms for an occupation include three aptitudes, only those occupational aptitude patterns which include the same three aptitudes with cutting scores that are within 10 points of the cutting scores established for the specific norms are considered for that occupation. The only one of the occupational aptitude patterns in Section II of the Guide to the Use of the GATB, January 1962, which can be considered for the occupation covered by this study is OAP-35. The selective efficiency of OAP-35 was determined by means of the Phi Coefficient

technique. No significant relationship was obtained between the GATB, B-1002B norms for OAP-35 and the criterion data for the sample of Mushroom Inspectors 9-68.60. Therefore, the data for the sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.